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Some Affections of the Bovine Udder: their Significance to the Producer and the Consumer of Milk.*

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I fear I have chosen a subject much too extensive for complete treatment within the period of time allowed, and it will therefore be competent for you to ask questions regarding any phase of it that has not come within the purview of my remarks. I presume that some of you have intimate knowledge of the anatomy and physiology of the mammary gland, but as others may have devoted less time to it, I have thought fit to review its structure briefly. The milk secreting apparatus of the cow . . . consists of skin, muscle, fibrous, fatty and connective tissue, milk ducts and sinuses, nerves, blood vessels, lymphatics and secreting cells, and is more or less covered with soft hairs which in a dairy herd somewhat menace clean production of milk. It is made up of four quarters united in pairs and arranged symmetrically. The pairs are quite separate, and I am of opinion that normally this is equally true of the quarters, although one important author says that there is anastomosis of ducts in the higher regions of the udder between the anterior and posterior quarters of each side of the gland but none between the two halves. This may be true in a small percentage of normal udders and I admit having met with its evidence when inflating the udder on occasion in the treatment of milk fever, but I regarded this as evidence that at some time or other the delimiting tissue had become prejudiced and fenestrated by bacterial action during a former attack of mammitis. Despite the fact that one cannot mark externally any division between the anterior and posterior quarters, the above view is materially confirmed by observations made on the great majority of cases of initial mammitis which we find are confined to one quarter, whether occurring by natural infection or artificially produced. . . .

One has constantly to keep in mind that the udder of a milk cow is highly vascular and very active physiologically in the secretion of a product that is a fertile medium for the growth of many kinds of bacteria. I have heard it suggested that the position of the udder as a food factory (on excess duty in these days) is bad and that it should be at the other end of the animal, and much has been said and written of late by milk hygienists about the unfortunate nearness of the mammæ of the cow to the excreting effluents of the body and its constant liability to soiling by alvine discharges. But I venture to say the best dreamers amongst them could not better nature's plan. There is no position outside of the trunk where it would be less liable to accident or infection. Think of the protection the udder of normal size is afforded in its position, how it is guarded by the broad flat thighs, supplemented by the draping of the precrural folds of skin, while the resiliency of the abdominal wall above, admits, without hurt, the upward pressure exerted on the organ when the animal is recumbent. Situated elsewhere, it would need to be pachydermatous and if we must admit that its surface is readily soiled because of its position, any resulting evil is in great measure susceptible of control. It is worth while giving a passing thought to the fact that, unlike other glands of the body doing a lot of work, the secretion of the udder is stored within the organ itself, rendering its tissues liable to direct attack by any pathogenic bacteria that may gain access to the milk *via* the teat. By contrast, any infection of the contents of the urinary bladder may leave the working cells of the kidneys unimpaired for a long time owing to the protection afforded by the intervening ureters or tubes that convey the urine to the bladder as it is secreted.

There is no doubt that through intensive selection of the heavier milking strains and continuous feeding with highly concentrated foods, the development of the udder and its capacity to yield milk almost amounts to an abnormality in these days, which, however much it is to be coveted or desired (and it is the aim and goal of all up-to-date breeders of milch stock), has inevitably brought to it a train of disposition to infections and traumatisms that severely test the patience and skill of dairymen. The extent of failure on the part of a dairyman to observe the sanitary requirements essential to the safe handling of a herd of deep-milking cows is often the measure of his affliction. Indeed, nothing teaches him so effectively the virtue of cleanliness in the handling of milch cows as an outbreak of acute mammitis. The labour entailed, the loss sustained, and the disorganisation of the herd and the milk supply impel him to do all he can to control and prevent a recurrence of the dread disease.

In considering affections of the udder to-night it is not my intention to attempt any text-book style of technical description of the various forms and degrees of mammitis. My chief aim is to press home the fact that mammitis is *a contagious disease* capable of control and to indicate as clearly as I can that in great measure its prevention and control require exactly the same sanitary measures as are essential to the production of clean milk. The adoption of cleanly methods in the cowshed is therefore a double-barrelled gun, because, like the quality of mercy, it is twice blessed. There is no doubt that an ever-increasing impetus has been given to the importance

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of diseases of the cow's udder by the awakening of the public mind to a knowledge of the dangers that lurk in the use of impure milk. The outcry for a pure and wholesome supply of milk and more of it is yearly becoming more general, and though its accomplishment is slow many of us are now strenuously engaged in the campaign and especially in increasing the number of herds licensed under the Milk (Special Designations) Order (Scotland) of 1923.

Though team-work between practitioners and research workers in regard to udder infections is increasingly evident, the State is doing too little at this time of day for the solving of problems that attach to diseases of the udder of cows alike for the preservation of our stock and because of the vexed question of the culpability of impure milk in increasing such diseases of the human subject as septic sore throat, etc. My own view of the matter is that, apart from the occasional presence of tubercle bacilli in the milk, which is admittedly a serious matter for certain consumers, the poor cow has in the past been too much blamed as a provider of other human infections, and often, too, on the ground of a mere hypothesis of which conclusive proof has failed in the hands of those who have pointed the finger. It is to this circumstance in great measure that we owe the abnormally low consumption of milk in this country, and the restoration of the consumer's confidence can only be brought about by an intensive propaganda at the hands of those whose interests are involved.

To-day there are no people, whose opinions matter, who do not recognise that certain forms of mammitis are contagious. Fifteen years ago the number committed to this view was much smaller, and one had difficulty in finding a single individual who did not believe that the great majority of cases were of a sporadic and non-contagious nature. There is little doubt that in Great Britain, as in other countries, before the idea of contagion was mooted in regard to any form of mammitis, many dairymen had experienced outbreaks of this disease directly due to unclean habits and ignorance of the potentialities of the first cases with a consequent absence of any attempt at prophylaxis. In 1912, I was asked to write up the subject of contagious mammitis for the volume of Contagious Diseases in a system of Veterinary Medicine by British authors, the intention of the editor being to have non-contagious mammitis dealt with in the non-contagious diseases volume. As I knew my views to be quite unorthodox at that period—inasmuch as I was convinced, through sheer experience, that every case of mammitis was potentially contagious—I had to declare my belief that mammitis should be dealt with wholly as a contagious disease. Much time was lost and considerable argumentative correspondence carried through before it was thought fit that I should give effect to my opinions in the text-book. The material was published nearly fourteen years ago, and it has received no open adverse criticism.

Udder affections, whether acute, sub-acute or chronic in character, are presumably not spread by aerial infection but almost solely by the hands of the milkers, and this is the chief fact I wish to drive home. Mammitis may be regarded as virulent when it claims an average of one victim daily for a week or two. In less virulent forms the spread of infection is much slower, while, in outbreaks markedly benign, the occurrence of cases, at long intervals only, might be urged as indicating an absence of relationship between them. This comparative tardiness in infectivity in these earlier days, when the bacteriology of mammitis had received little attention, led people to regard dietetic errors, defective ventilation, chills, improper milking, etc., as complete and sole causes and not merely contributory ones. But it is now quite generally admitted that all cases of mammitis are due to *microbic action*. In his paper on "Contagious Mammitis in Cows," *Bulletin* No. 107, Mr. A. C. McCandlish initially draws a distinction between contagious mammitis and what he regards as ordinary forms of the disease, although he definitely agrees that even the latter forms are dependant on bacterial action and may be carried from cow to cow by the hands of the milker. The concession of that point is tantamount to an admission of spread by contact, and as that is the definition of the term " contagious," it befits us to get rid of the ambiguity of thought by regarding mammitis, whatever its degree, as a contagious disease.

Again, it is worth noting here that the confinement of the disease in the great majority of cases to one quarter affords *prima facie* evidence of some weight in favour of infection *via* the teat, and puts completely out of count (in all such cases involving only one quarter) the view of some authors that the disease is sometimes caused by bacilli which arrive at the udder *via* the blood stream. Infection *via* the circulation must necessarily involve generalisation with an immediate and simultaneous sowing out of bacteria over the system, including all four quarters of the udder, and this is only seen in acute septicæmia ending fatally and very occasionally in tuberculosis when an internal parental lesion, breaking down and erupting masses of bacilli into the blood stream, they are similarly sown broadcast, causing acute miliary tuberculosis of the lungs (galloping consumption) and a speedily advancing tuberculosis of the whole tissue of the udder. It seems to me that when Mr. McCandlish expresses the view, at three places in his paper, that when a cow swallows the causal organisms of mammitis in food or water they gain the blood through the walls of the digestive system and are carried to the udder to locate and produce disease, he forgets the interceptive and protective action of the lymphatic system. When more than one quarter is invaded and less than four, it is at once problematic whether infection was diffused directly from the tissue of the one originally affected to that of the other through an incompetent division, or if the implication of more than one quarter was due to a like and perhaps simultaneous infection of more than

one teat on account of their demonstrable exposure to a common cause.

We must always bear in mind that anything that lowers the vital defences of the udder favours the pathogenicity of the invading organisms in this as in every other microbial disease. If, through any contributory cause, lowered tissue resistance is brought about, any bacteria present in the teat or milk sinus are comparatively unhampered in their attack on the internal structure of the organ. To envisage all the sources of danger to the udder, one must even regard every suppurating sore on the person of the milker or the cows as a menace likely to become operative provided the milker dresses such sores and does not rigidly disinfect his hands. Many cases occurring immediately after calving are doubtless due to infection from uterine discharges, which ooze down the tail and on to the udder, when the bacteria contained therein gain an entrance, *via* the hind teats almost unexceptionally. Yet how often does one see cows grossly soiled in this way, and occasionally we find decomposing fœtal membranes hanging from a recently calved cow for days on end and receiving but little attention. *Every case of mammitis in the byre is a potential source of danger to the healthy cows when strict precautions are not taken to prevent infection being carried from the one to the other by the milker's hands.* Moreover, it is not yet unknown for the milkers to draw off the diseased product of an affected quarter on to the ground, leaving the cow to paddle in it and eventually lie down and contaminate the teats and udder in the obnoxious discharge. Since, therefore, the stalls, on the one hand, are often and variously contaminated, and, on the other, there is no limit to the means whereby milkers may soil their hands, it is manifest that the sources of micro-organisms capable of setting up udder trouble are manifold.

Again, there is every reason to believe that *flies* carry infection to the udders of cows, and under certain circumstances I believe they do play an important rôle. They are notorious germ-carriers, and when they are plentiful the moist teat of the dairy cow is a happy hunting ground between which and heavily infected surfaces they flit to and fro. I regard them as culpable in many cases of intractable mammitis in midsummer which were so common in the very hot days of some past years. This condition is often referred to as "udder clap," or "August bag." In one year I knew a dealer and grazier to have thirty cases of this destructive malady among his cows on the higher lands. Some of his land, however, lay close to a burning colliery bing, the sulphurous gases from which have a bleaching effect on the grass for a considerable distance, and he never had a case in these fields, the presumption being that the atmosphere around is inimical to flies. I have no exact information whether it is a biting fly that is responsible, infecting the cow by puncturing the skin with its soiled proboscis, or a sucking one attracted by the waxy secretion on the teats and sowing virulent bacteria on their surface. In any case, the occurrence of these warm weather cases even in virgin heifers as well as in pregnant cows suggests substantial exaltation in the virulence of the organisms which the flies have doubtless brought from some putrid mass of organic material or carcase in the vicinity. The high temperature is undoubtedly responsible for their greater power in attack and their rapid development. These hyper-acute cases are almost unknown in relatively cold summers.

As we have stated already, milk is a suitable propagating medium for so many organisms that when they have been conveyed to the teat that is left wet or has a droplet of milk at its point, the stage is already set for an udder invasion. We do not forget that healthy udder tissue and the milk contained therein possess a marked bactericidal power, but this is readily lost, even in the case of the less virulent organisms, in the presence of a well-defined debilitating cause, such as undue exposure to colds, draughts, etc. While it is admitted that the operation of such secondary causes is in great measure essential to the sucsess of the less virulent types of bacteria in setting up the inflammatory process, they can materially give speed to the spread of the virulent forms also. On the other hand, we have observed in some acute outbreaks such high virulence in the causal organisms that they seemed to be able to deliver their attack in the absence of any chill or other contributory factor on the most robust cows kept under conditions regarded as above the average. Recently-calved animals in apparently good health the night before and affording no hint of impending trouble would be found the next morning shivering violently and straddling uneasily behind in their endeavour to relieve from pressure a violently inflamed quarter.

The period of *incubation* in cases of mammitis may therefore vary from a few hours in acute cases to several months in the milder forms of the disease, when cases of weed are only seen at odd times throughout the year, their determination in almost every case being traceable to some untoward experience on the part of the cow making some division of her udder vulnerable to the attack of the bacteria harboured within it. We must recognise that the actual disease in cases of mammitis is the bacterial invasion; the irritation and inflammation they set up are but nature's reaction, and the battle is fierce and its evidence greatly manifest according to the pathogenic power of the causal organism and in some degree the susceptibility of the patient. Despite what has been published by some authors, it is unquestionable that the production of mammitis is not peculiarly the rôle of any particular species of microbe and that different grades of virulence obtain among the bacilli and the various forms of cocci whose culpability has been well proved. Investigation has shown that many outbreaks have been due to a single definite species, but cases due to mixed infection are not unknown. To determine this point it is necessary to have laboratory examination of the secretion at an early hour in the attack, for virulent bacteria are soon provided by

camp-followers. It has been my experience too that the type and quality of case found in a given cowshed is generally more or less standardised in course and effect, variation being chiefly due to lactation activity. This is due to the fact that the cases succeed each other through the agency of the milker's hands chiefly, the initial one being parental to those that follow. On this basis alone can it be explained that one dairyman truthfully boasts the efficacy of his treatment which may be quite a simple procedure, while another complains that, in his herd, the like methods, or even better measures, miserably fail to relieve the animal. It is all a question of the potency of the infection prevailing in the herd. We have seen a succession of newly-calved cows become infected in a byre until fifteen were useless, when it was deemed expedient to sell all the other maturing cows before they calved, and it is worthy of note that some of these cows were traced and did quite well in other surroundings and in other hands.

When a dairyman has been experiencing cases of mammitis in his herd it is essential that he should regard the majority of his cows as potentially infected and likely to be harbouring in their udders the causal organisms of the disease which are only awaiting their opportunity. The number of animals in this condition can only be limited by careful management, good housing, sensible dieting, strict sanitary measures and efficient milking. Between milkings the bacteria contrive to multiply, but the bi-daily milking depletes the culture and so the hidden process goes on until the bacteria get their opportunity of gaining ascendancy at the hands of an inefficient milker or careless attendant. It is by realising this that we can understand in the case of infected byres the mystery of cows that, having been reputedly dried off in a proper way and sent to grass, returned to the herd as back-calvers with marked weakness in milk production in one or more quarters. According as they have been exposed to infection, the drying-off process must be extended in order to put an absolute limit to the possibility of any milk being secreted after stripping has ceased. If when a cow is put away to grass any milk be left in or is thereafter secreted by a quarter containing latent infection, it becomes, despite its saltish character, a rich culture of the organisms present. The prolonged contact of this heavily infected secretion with the delicate mucosa of the sinus and milk ducts as well as the cell structure of the acini not only prejudices their structure and *ipso facto* their future capacity to secrete milk, but may enable the organisms, whether cocci or bacilli, to proliferate and spread into the lymph spaces and thus a battle of greater or lesser intensity is waged by the intruders against the defensive forces of the udder tissues. The degree of pathological change varies with the factors in operation, and if the cow be within range of observation the evidence of the infection will be observable, but in many cases the animal is at a distance and the inflammatory process may have terminated unseen, and if the dry period be of some length it is only after the cow commences her next lactation period that she is found to be weak or almost blind of a quarter, and the owner wonders how it happened. If the dry period be a short one and the bacterial action is not completely overcome by the production of specific lysins before the cow calves, the re-establishment of physiological activity in the udder begets a recrudescence of the trouble in the quarter, and, unlike the other case, in which only the quantity of yield was reduced, the cow sickens, as under a new attack, and her capacity to yield from the healthy quarters is materially reduced for that lactation period. Should it chance that such a cow is sold a day or two before she calves, when the udder is "swaumy" (involved in œdema), a difficult problem arises when she is milked for the first time and found to have a bad quarter as to whether the trouble was contracted before or after sale. In very many such febrile cases accompanied by heat, pain and swelling of a quarter yielding a diseased product it is but too easy to justify an opinion that it is a recently-contracted weed, although the likelihood is that the cow was infected long before she was sold and the seller really responsible. *It is therefore always a risky business buying cows due to calve from a herd that has been troubled with cases of mammitis, and one should avoid buying three-teated cows unless it is quite evident that the weak quarter is quite recovered and the disease process quiescent.*

It has been my experience with mammitis that the easily-milked cows—those with free sphincters at the point of the teats—show less resistance to infection than animals hard to milk through over-competence in their teat sphincters. The loose sphincter presumably enables a comparatively easier entrance for the bacteria, and being more liable to a condition of wetness from escaping milk the initial provision of an external culture of organisms brought to it by a soiled hand is a facile matter. But, you may say that a weed often results in a cow hard to milk through a sheer and increasing difficulty in taking off the milk efficiently. That is admitted. In such a case the effect of the effort required is to irritate and produce greater induration of the sphincter till its patency almost vanishes or a lesion or abrasion results in a veritable wound whereon bacteria will grow profusely and soon set in train an infection of the quarter. This is materially hastened if in such a case a teat-syphon is used to draw off the milk, for its insertion too readily involves the carrying up and the implantation of the bacteria on the inner structure of the teat. Needless to say, we regard the use of any kind of teat tube or bougie as essentially dangerous unless under a system of rigid asepsis and caution. But notwithstanding what has been said, there is no denying the remarkable efficiency of the teat sphincter as a defensive structure. If it were not so, what havoc would be produced when immediately beyond it in the teat there is in the milk an almost perfect culture medium for most organisms. We must not fail therefore to pay a tribute to Nature's mechanism when we remember how many cows have experienced soiling the udder and teats with various obnoxious materials day by day for years and have never fallen victims to udder mischief.

In considering the culpability of milk derived from herds that have been experiencing cases of udder trouble other than tuberculosis of the udder or cow-pox, we are confronted with a problem of great difficulty and of paramount importance in view of opinions that have been expressed and the interpretation that has been given to Section 13 (1) of the Milk and Dairies (Scotland) Act of 1914, which says :—

"It shall be an offence under this Act for any person to consign, sell, offer, or expose or keep for sale for human food, or to use or suffer to be used in the manufacture of products for human consumption, the milk of any cow which is suffering from tuberculosis with emaciation, or from tuberculosis of the udder, or from any sore on the teats accompanied by suppuration or bleeding, or *from any disease liable to infect or contaminate the milk*, or of any cow which is giving tuberculous milk, unless he proves that he did not know and had no reason to suspect that the milk was the milk of such a cow."

Therein *inter alia* lies the great problem of the "weeded cow." Is the product of three normal quarters of a cow that suffered an attack of weed in the fourth quarter some time ago necessarily infected or contaminated although the causal organisms of mammitis can still be demonstrated in the secretion of the defective quarter ? It is a burning question demanding early solution for various reasons. In the first and most important place, if the produce of the apparently healthy quarters of an udder which has had one quarter disorganised by bacterial invasion is inimical to public health, there ought to prevail at once an enormous increase of sanitary police work at the hands of the public health authorities and their officials, to say nothing of the need on the part of the owner to disclose at once the occurrence of every case of mammitis in his herd. As the indictment would be based on the demonstrable presence of bacteria in the product of the infected quarter, and as their presence would be capable of revelation for many months if not for years after the attack, the affected cow would remain dangerous, though perhaps in a gradually lessening degree as time went on, and as it would be most difficult to indicate a suitable day for her pardon she would for all practical purposes require to be put permanently out of commission as a dairy cow. What this would mean to many dairymen would not fall short of ruination, while its effective operation would seriously reduce the quantity of milk available to the consumer. It may be, and in some important instances it has been contended, that as the recognised causal organisms in cases of sore throat, summer diarrhœa, etc., are morphologically, culturally and in staining reactions similar or almost similar to those found in the diseased product of an affected quarter or it may be on the sores of a teat eruption, infective between the cows, that the milk from infected cows is *ipso facto* a cause of these diseases in the human subject. But this does not necessarily follow. It is singularly true that affections of the udders and teats of cows reach their highest peak at times of sudden changes in the weather, particularly to the lower temperatures that beget draughts, chills, etc., and we have shown how they operate to encourage latent bacterial infection. Similarly, is it not recognised that sore throats and all affections of the air passages in human beings predominate and assume their highest infectivity as from man to man at the onset of and during wintry conditions ? It is then that people are liable to chill and rendered vulnerable to the attack of the omni-present bacteria whose success is made possible by the atonic state of the tissues of the individual. While admitting therefore the profound need for Medical Officers of Health exercising the utmost caution in their efforts to protect the milk-consuming public against supplies that could even remotely be deemed suspicious or inimical to public health, it is not easy to agree that a good case can be got up against every cow that has had the misfortune to suffer an attack of weed in a section of her udder on the ground that bacteria can be demonstrated in the product of one quarter that suffered attack. In many cases this can be proved even in succeeding lactation periods when the animal from her three healthy quarters may be yielding maximum quantities of normal milk through Nature's beneficent tendency to compensatory hypertrophy and increase of function in the remaining quarters. If it is attempted to make the scratching of such cows an universal matter, it should be called in question by dairymen and agriculturists who are unlikely to get any compensation therefor and would have to bear the whole loss. We are probably all agreed that when a cow is sick and feverish in the earlier stages of mammitis or when, in the later stages, there is abscess formation, or when, at any stage, the product of the quarter affected is markedly offensive to the senses, the whole of her produce should be excluded from sale as raw milk. But the majority of cows suffering from an attack of weed recover their general health and the inflammatory process subsides within ten days (many in much less time) without abscess formation or other evidence of suppuration, and the secretion of the affected quarter gradually assumes the appearance of normal milk. Meantime the quarter has lost some bulk through atrophic changes, and the result is pronounced or almost absolute weakness in the quarter. Most dairymen in the past have habitually sent the whole produce of the cow away for public use when the appearance of the secretion of the defective quarter became normal if the quantity got from it was of any moment. In other cases the quarter is left almost dry and shrivelled, and its product needs no consideration. In either case, however, the bacteriologist can reveal that organisms persist in any secretion present, and though we do not seek to contend that the seemingly normal produce of a quarter that has suffered attack and which is unduly rich in bacteria should be used raw for human consumption, it is surely another matter with normal milk of the normal quarters, which in most cases can run the gauntlet of bacteriological examination as well as the produce of a healthy cow that has never been the victim of weed. Though impractical men may consider it possible that

the milk producer may be careless enough to send off the obviously altered product of an abnormal quarter, this is never done unless in the exceptional circumstances of a sheer inadvertence. The milk producer is too well aware of what would follow. The keeping quality of his milk would at once be prejudiced, it would be returned to him and he would be liable to lose his market. No dairyman knowingly does this; retribution is too certain. The difficulty of the weeded cow and the possibility of local authorities insisting on her total suppression is already becoming a practical question. The section of the statute quoted is undoubtedly capable of being read as preventing the sale of any milk from a cow suffering from a disease liable to infect or contaminate the milk irrespective of whether the actual milk sold is contaminated or not, and this construction has in fact been already adopted. A final decision on the interpretation of the section can only be obtained from the Law Courts, but meantime it is worthy of consideration whether the Board of Health should not be approached and made aware of the situation which is likely to arise if the section is interpreted as prohibiting the sale of all milk from an animal so affected irrespective of the extent of the infection. You must clearly understand, however, that what I have said has no reference whatever to tuberculous conditions of the udder. The whole milk of a cow suffering from tuberculosis of the udder or which is yielding tubercle bacilli in her milk is manifestly dangerous, and fortunately the animal is now amenable to the Tuberculosis Order for immediate slaughter. In order to encompass, if possible, the notification of every case of tuberculosis of the udder, the Tuberculosis Order requires the stock-owner to report all cases of indurated udder or other chronic disease of the udder. An experienced veterinary inspector can readily tell the difference between tuberculous induration and induration due to the organisms responsible for ordinary mammitis, and although one meets with many cases whose clinical features and history are indefinite, these are always put through and sampled as suspects. Many owners are not yet sufficiently alive to their responsibilities in this connection. The flare of an ordinary painful weed seems to exercise their sense of responsibility and culpability more than the subtle coldness of a tuberculous induration with no immediate change in the appearance of the milk or accompanying sickness. When in the course of inspection one meets an undoubted case one is, on enquiry, told with the confidence of innocence, assumed or otherwise, that this cow has never been ailing and that her milk is all right, although it is admitted that the bulk of the quarter has not given way sufficiently in recent days in the process of milking. Unconsciously, they are affording corroborative evidence that the condition is a tuberculous one and the cow highly dangerous as a milk producer.

Prevention of Udder Infections.

Whatever the causal agent may be, prophylactic measures remain the same, and in a great degree indeed the same is true of curative treatment. It is only these dairymen who realise the microbial origin of udder troubles who ungrudgingly adopt adequate preventive measures. Every cowshed should be disinfected twice a year or oftener—parts of it much oftener. Avoid spilling of milk and never strip the product of a cow's udder—healthy or diseased—on to the ground. Whether it be the discarding of the first streams as routine procedure prior to milking or the altered secretion of an abnormal quarter, it should be drawn into a special receptacle containing if necessary a little disinfectant solution and buried or poured down the drain. If the floor does get contaminated the place should be scalded, cleansed and disinfected. This requirement gets too little attention in the majority of cowsheds. Get rid of all flies in the byre, attend to their places of breeding, and in summer time cover up all decomposing organic material in the fields, and in very warm weather use a protective dressing on teats and udders. Before each milking every soiled cow should have her hind parts and udder washed clean, and thereafter the teats and udder of every cow to be milked should be swabbed with a damp cloth that has been steeped in a mild disinfectant solution. These measures protect the cows' udders against bacterial invasion, enable the clean production of milk, and make the teats nicer to handle. When each cow has been milked the teats, etc., should be wiped dry with a clean cloth, and if any danger threatens in the byre the disinfecting swab should be used again before drying. Needless to say, milkers should have clean overalls, finger-nails should be kept short, hands should be well washed and disinfected before beginning to milk and rinsed in water (running water if possible) between cows. If it is possible to avoid it no milker should dress feet sores or any kind of suppurating sore in the byre or out of it. If this be done by any milker rigid disinfection is necessary to avoid the bringing of latent infection to the teats. If separate housing accommodation is available every victim of udder mischief should be removed from the milking herd and get the attention of a reliable individual whose services are not required in the milking herd. If a special attendant is not available nor means of quarantine, affected animals should be stalled at one end of the byre, all the healthy quarters should be milked first with the necessary precautions, and the diseased quarters last in the manner already described, and thereafter the udders should be swabbed with disinfectant solution and dried and the attendant's hands thoroughly cleansed. The remaining disinfectant solution should be applied to the hind parts of the cows' stalls. *It is unfortunate that so few premises have suitable small byres to serve as hospitals when required.* All newly bought in cows should be quarantined until their udders are proved to be sound and for several other equally cogent reasons in the prevention of the spread of infectious diseases. The use of infected teat-tubes or bougies must be avoided. Even when sterile their use is attended with danger. In too many cases the silver teat-tube is carelessly used and kept. It should be cleansed in

water after use and boiled before putting away wrapped in boric lint, and be re-boiled before being used again.

Characteristics and Diagnosis of Tuberculous Mammitis.

In most cases only one quarter is affected, occasionally two contain lesions, and in the extremely rare case where one finds all four quarters undergoing tuberculous induration the animal is invariably suffering from generalised tuberculosis, with approaching death—a type of case already referred to. It is generally believed that in the majority of cases the tuberculous lesion of the udder is secondary to some parental one located elsewhere in the internal organs, and that the bacilli have arrived centrifugally *via* the lymphatic system. Infection with tubercle bacilli *via* the teat, though perhaps rare, is not only possible but probable, and in recent days we have seen a few cases of enormous tuberculous induration of the udder in which the naked-eye evidence of disease in the rest of the body was very limited—in one case only three small lesions in the lungs. The best proof of primary infection with tubercle bacilli by this route would be to find a case devoid of lesions elsewhere than in the udder. Further, in these odd cases where the lesion begins near the teat it is not unlikely to be a primary one even though the *post-mortem* examination reveals more advanced lesions in other parts of the body. A common experience has been to meet cases of great tuberculous enlargement of the quarter in cows recently calved, the rapid increase being presumably due to the vicissitude of hyper-activity in the organ during and after the calving period. The tuberculous lesion is most commonly met up in the back of one hind quarter, sometimes lower, at the level of the base of the teat, adding depth to the quarter, and very occasionally it is seen as a well-defined tumour in front of the teat and tending to spread over its base. The number of cases involving a fore quarter only is probably as low as five to ten per cent. Occasionally we meet with cows that yield tubercle bacilli in their milk and we find it impossible to detect any change in the udder tissue even under the most careful palpation. In such cases the presumption is that there is a deep-seated microscopic lesion of recent origin. The size of the lesion when detectable varies greatly. Much depends on its age, but while some grow speedily others progress very slowly, the rate of growth depending on different factors. Though the milker may be aware of heaviness in the quarter he often regards it lightly in the absence of any apparent change in its product, which for weeks on end may seem to be normal milk though containing many tubercle bacilli. *This is the most unfortunate feature in the case of such a dangerous cow.* The lesion is usually a single one, with well-defined though often irregular borders, having the consistency of a lump of vulcanised rubber placed in the tissue of the quarter. The quarter with multiple discrete nodules so often thought to be tuberculous by some people is almost never found to be of that nature. The lesion is painless and has no adhesion to the skin, and there is no history of the animal having experienced the febrile condition that characterises the occurrence of an ordinary attack of mammitis. Though for a time the secretion has a normal appearance, when a sample is centrifuged the deposit is greater than in normal milk and puts the microscopist on the *qui vive*. By and by the product changes to a grayish colour showing deposit, and later assumes an *amber yellowish colour* which is derived from the characteristic yellow-coloured centres in the lesion and is quite typical and always rich in bacilli. In the dry cow with a tuberculous udder lesion the quarter always contains some of this fluid though the others are quite limp and empty, and if the cow has been a long time dry it contains no flakes of casein. The presence of such a deposit indicates some degree of lactation.

Although we have occasionally met with cases wherein other organisms were found in a sample of milk containing tubercle bacilli, this is an exceptional experience.

In the case of a cow with chronic induration of the udder a diagnosis of udder tuberculosis is not justifiable on the ground that she reacts to the tuberculin test.

X-Ray Cinematography.

"Two thousand people sat spellbound in a London cinema and watched on the screen the lungs of a living man expanded and contracted," says the *Daily Express*, in a recent issue.

"This was made possible by X-Ray cinematography, particulars of which were given exclusively in the *Sunday Express* recently. X-ray cinematography is the product of eighteen months' research work by Mr. Frederick Melville, radiologist at University College, Gower Street, London, and Mr. E. Edwards and E. Warnforde, of British Instructional Films.

"Mr. Melville explained the difficulties encountered in the making of the films to an audience of doctors, scientists, medical students, and educational authorities.

"'America,' he said, "has been trying for years to make X-ray motion pictures. but has not succeeded in achieving anything more realistic than a collection of still photographs rephotographed with a movie camera.

"He showed pictures of vocal chords in action. A terrier dog and a monkey were the subjects. The pictures, taken through the mouths of the animals, were made for an eminent surgeon who is studying the effect of paralysis on the vocal chords.

"Pictures of the movements of the fingers, wrist, elbow, forearm, knee, and ankle were shown, and, most important, the beating of the human heart.

"The pictures were taken less than three weeks ago. No student was allowed to go through more than one test because of the danger of dermatitis caused by the amount of light needed to make the film.

"The filming of the heart was dramatic. Mr. Melville supervised the placing of his patient, a tall, keen-eyed young student, behind the leaded screen, reminded him tersely that he was about to undergo twelve times the usual X-ray dose, and switched on the current.

"A tremendous crackling and hissing ensued; the image of the man's chest with the rapidly pulsing heart stood out in bold relief on the green-coloured screen; the camera cranked; the 'target' in the X-ray bulb grew incandescent. Eight seconds passed—the ordeal was over.

"The film was rushed to the laboratory to be developed. The excitement when it was realised that the experiment was successful can be imagined.

"A Harley Street physician, after seeing the film, said: 'This will revolutionise the teaching of anatomy in this and every other country.'"

The Veterinary Record.
12th February, 1927.

QUALIFYING TITLES.

On the 5th January, 1917, the Council of the Royal College of Veterinary Surgeons passed a resolution expressing "disapproval of the practice of qualifying the title of Member of the Royal College of Veterinary Surgeons by adding anything to the letters M.R.C.V.S., such as 'L' or 'E.'" This resolution is published annually in the Register of the R.C.V.S., and for the year 1926 will be found at page 87. It is difficult to understand what the added letters are intended to convey; that is to say, whether or not the persons making use of these additions wish to inform their clientele that they received their training at London or Edinburgh, as the case may be, even if the fact may have been overlooked that "L" may mean Liverpool and "E" may denote England.

It is hardly necessary to point out that the adoption of additional letters is entirely wrong, the diploma or licence to practice, which is covered by the letters patent M.R.C.V.S. being, as the holder well knows, in no way indicative of, or bearing any relation to, the school at which a graduate was trained. Ten years have elapsed since official notification as above was made, yet the practice still continues, and it would seem right, therefore, that the Council of the R.C.V.S. should now consider the expediency of translating disapproval into corrective disciplinary action to ensure that the qualifying title for which it is responsible is not amended or abused at will.

It is, however, in relation to another misuse of letters after a name that we wish specially to comment, an appropriation or adoption of title for which we can see no point or justification, and which is obviously intended to impress the uninitiated, more or less after the manner of the high sound of an empty pot. Quite recently, two instances of the use of the letters F.R.S.M. (Fellow of the Royal Society of Medicine) and F.G.V.M.A. (Fellow Glasgow Veterinary Medical Association) have been referred to us. Others of a like nature are of frequent occurrence. In no sense can they be considered qualifying, but they are distinctly open to objection and altogether in bad taste. We must deprecate in no uncertain fashion their use in official or semi-official documents, in catalogues of Shows, or after names as qualifications when applications for appointments are made. In the latter case it is permissible to mention that applicants are members of various professional societies or associations, but to imply special qualification by the misuse of the initial letters of these societies or associations is ludicrous nonsense, and absolutely opposed to a right sense of professional dignity. There are, however, certain learned bodies of high scientific distinction to membership of which the above remarks are not intended to apply.

CLINICAL AND CASE REPORTS.

Osteo-malacia in the Cat.

By T. F. Prime, M.R.C.V.S., Upper Norwood.

There is a great variety of veterinary literature on the diseases of cats. although there are one or two members of the profession who should be able to help in securing a record of the various diseases to which they are liable, with the symptoms and treatment. Many veterinary surgeons forget that as the cat is the only natural enemy of rats and mice in the towns, the animal is of great economic value, as rats and mice annually destroy property to the value of many millions of pounds per year. In large numbers of warehouses, shops, etc., the owners are always willing to spend a certain amount for advice and treatment of the animal, if ill.

A cat was brought to my surgery, as the owner was complaining of the funny crouching way in which the animal was walking, and also because the heads of the bones were enlarged and they thought that, owing to the cat constantly sitting in a damp cellar, it had rheumatism (which, by the way, I have never seen in a cat), owing to the damp, dark place. On examining the animal I found that the heads of the bones were enlarged. The shafts of the long bones curved and seemed to let the body down, so that when walking it was difficult for the cat to keep the body more than an inch or so from the ground. The bones were soft, with the jaw and parietal bones so soft that they easily responded to slight pressure of the fingers. The cat was a male, castrated tabby about five years old and had, up to a comparatively short time before, been apparently healthy. It was eating well and had been fed on meat, fish and milk. As there was no chance of recovery I put him into the chloroform box.

The following graduates of the Royal (Dick) Veterinary College, Edinburgh, have received the undermentioned appointments (previously notified in the *Record*) :—D. S. Rabagliati, O.B.E., B.Sc., F.R.C.V.S., D.V.S.M., to be Chief Veterinary Officer, West Riding of Yorkshire; G. B. Purvis, F.R.C.V.S., to be Government Veterinary Officer, Malay Federated States; A. Brownlee, B.Sc., M.R.C.V.S., to be assistant, Animal Diseases Research Association of Scotland; J. R. M. Innes, M.R.C.V.S., to be assistant, Institute of Animal Pathology, University of Cambridge; and J. W. Emslie, B.Sc., M.R.C.V.S., to be assistant, Department of Pathology, Royal (Dick) Veterinary College, Edinburgh.

Prolonged Gestation in a Bitch.

By J. P. ISHERWOOD, M.R.C.V.S., Blyth.

January 20th, 1927. The following case of prolonged gestation may prove interesting to your readers. On November 22nd, 1926, I was called to see a smooth collie bitch, the property of Mr. E. B. Atkinson, a well known breeder and exhibitor of prize smooth collies.

This bitch was served on Sept. 10th and 11th. She had therefore gone nine or ten days over her time and the owner was getting anxious, as she made no efforts to whelp but was going about, and feeding just as usual.

After carefully examining her I came to the conclusion that the pups were there but were dead, and told the owner that further interference was undesirable and that nature should be allowed to take her course; advising moderate exercise and light food. I heard no more from him till January 16th when he called and informed me she was whelping—she had then *one* pup. Next day he called again and told me she had had *three* more—all dead—of course. The after-birth came away immediately after whelping and there were no signs of decomposition.

These pups seem to be normal in every way and one would be of the opinion they were up to time and no more. The owner has preserved three pups in spirit. I have the fourth. Is this a record? The bitch is a strong and healthy one. The cause is evidently inertia of the womb, but why this should be, in a bitch of her constitution, is a puzzle to me.

January 23rd, 1927. I was called in this morning to see her. She had a temperature of 105°F., was breathing heavily and showing symptoms of septic metritis. Examination revealed *another* pup in a very decomposed condition—which I took from her. Ten minutes afterwards she collapsed and died. The bitch had been going about as usual up to Saturday (22nd) when she lost her appetite and appeared a little off colour—so the owner told me. We administered vaginal douches daily for two days after whelping, and there was no sign observed of this, the *fifth* pup.

A Few Observations on the Use of Vaccines in the Treatment of Mastitis in Cattle.*

By G. A. MOORE, Dublin Veterinary College.

In the course of his everyday work during the summer months, the general practitioner is constantly meeting cases of chronic mastitis in cows and heifers. Chronic mastitis, as met in practice, is a most tantalizing disease. One case will get much improved and recovery may even take place following the use of internal antiseptics and massage. Most cases, however, do not yield to such treatment, and short of operative treatment no medicinal measures are of any use. Most owners have a rooted objection to having the teats cut off their cows or the whole udder removed, especially when they are told that the condition is not very prejudicial to the life of the beast and that the affected quarter or quarters may more or less return to normal after the next calving. Therefore, what usually happens is that the veterinary surgeon "tries something" and then lets nature have its fling provided no untoward symptoms develop. Some clients, who are ever ready to censure, put down this inability of the veterinary surgeon to cure their cows to be a result of the latter not "knowing his job."

The use of vaccines in chronic mastitis would seem to be indicated The condition is a chronic suppurative disease confined to the udder, and one would expect that the inoculation of the organisms causing the disease into the body elsewhere and the subsequent formation of antibodies in the blood, would have a beneficial effect. Below are appended a few notes concerning some cases in which treatment by vaccines was tried.

CASE 1. This was a heifer within three weeks of calving. One quarter only was affected and the causal organism was the *Bacillus pyogenes*. An autogenous vaccine containing 50,000 bacteria per c.c. was prepared and an initial dose of 1 c.c. given. There was a thermal reaction of 0·2° F. No improvement in condition was noticed. (The affected quarter was kept bathed and massaged and all the pus possible was drawn out of the teat.) Five days later a dose of 2 c.c.'s of the vaccine was given. A slight diminution of the amount of pus was noticed and the teat canal was thickened. Two days later the heifer calved. Immediately after calving the affected quarter became very tense and painful, and patches as hard as testicle and as soft as lung alternated. The teat canal was as thick as a pencil and very hard. It was impossible to draw off any material. A liniment containing potassium iodide was applied and a further dose of 3 c.c.s of vaccine given five days after calving. At this stage there was a decided improvement. Further doses of 4 c.c.s., 5 c.c.s. and 6 c.c.s. were given at intervals of five days, and at the end of three weeks complete resolution had taken place.

CASE 2. This was a maiden heifer. One quarter was affected and the causal organism was a staphylococcus. The "Mastitis Mixed Bacterin" issued by Messrs. Willows, Francis, Butler and Thompson was used. Treatment was continued for four weeks. By this time partial recovery had taken place. The heifer was then put out to grass and the following day her condition was worse. Further vaccination was of no avail. The owner refused to have the teat cut off, but the quarter ruptured near the base of the teat. The quarter was syringed out several times daily with a 1 in 1,500 solution of pot. permanganate. By the end of another month the quarter consisted almost entirely of new connective tissue, which was not adherent to the skin.

CASE 3. Two cows belonging to the same owner had all four quarters one mass of suppuration. The owner had had three cows affected and it was only when one died that he sought advice. The causal organism was not determined, but treatment with the "Mastitis Mixed Bacterin" was adopted. Three injections were sufficient and on our third visit the cows were perfectly recovered.

* Contributed for award under the N.V.M.A.'s Clinical Prize Scheme for Students.

ABSTRACT.

(The Influence of the Cow's Diet on the Fat-soluble Vitamins of Winter Milk. GOLDING, SOAMES AND ZILVA. *Biochem. J.* (1926) 20. 1306—1319.)

Earlier work has shown that the secretion of vitamins in the milk is controlled by their presence in the food of the lactating animal, but as the separate identity of vitamin A of the anti-rachitic vitamin D was not fully appreciated at that time, the following research was undertaken. In these experiments cattle were kept in large, airy but badly-lighted stalls for several weeks during the winter. They were divided into three groups, which were fed as follows (1) On a basal diet of oat straw, roots and meal mixture. (2) On the basal diet *plus* kale, and (3) on the basal diet, supplemented by a daily dose of cod-liver-oil (2-8 oz.) The vitamin content of the different milks was ascertained by feeding the butters to standard rats which were kept on diets adequate in all other respects save that when testing for vitamin A, this vitamin was lacking from the rat food; similarly, in the vitamin D experiments the only possible source of this vitamin was the added butter. The growth of the rats as compared with that of positive and negative controls was taken as an index of the vitamin A content of the butters. The vitamin D content was determined by taking as the standard of comparison the ratio A/R, of the ash in the bone of the tested rats to the organic material other than substances extracted by hot alcohol and ether. This ratio is shown to be a reliable index of the degree of calcification. The following conclusions are made:

(1) The inclusion of kale in the winter ration of the cow raises the vitamin A content but not the vitamin D content of the milk.

(2) The inclusion of cod-liver oil in the winter ration of the cow raises the vitamin A and the vitamin D content of the milk.

(3) Previous observation that the administration of high doses of cod-liver oil to cows reduces the percentage of fat in their milk is confirmed.

The authors add "our results are not without practical significance when we consider that infants born during the winter and brought up on cow's milk would depend almost entirely, unless cod-liver oil were given, for their supply of anti-rachitic vitamin on the milk, during the early months of their existence. The anti-rachitic value of the average winter milk would not be of a much higher order than that of the milk from our basal—or kale-fed cows. It can be doubled by administration of cod-liver oil to the cows during the winter months."

W.R.W.

At a meeting of Linlithgow District Committee, it was reported that the Board of Health were insisting upon the appointment of a full-time veterinary inspector to carry out the duties under the regulations of the Milk and Dairies Act. It was reported that at a meeting of local authorities in the county to consider this question it was agreed that if an officer was appointed the salary should be £500. It was agreed to call a meeting of the local authorities interested, when all arrangements regarding the post should be discussed.

DIVISIONAL REPORTS.

Mid-West and South Wales Division.

ANNUAL MEETING AND DINNER AT BRISTOL.

R.C.V.S. PRESIDENT ON "THE VETERINARY SURGEON IN RELATION TO PUBLIC HEALTH."

The visit of Lt.-Col. J. W. Brittlebank, President of the Royal College of Veterinary Surgeons, to deliver an address on the subject of "The Veterinary Surgeon in relation to Public Health" was the chief attraction on the occasion of the Annual Meeting and Dinner of the Mid-West and South Wales Division, which were held at the Royal Hotel, Bristol, on Friday, January 21st, 1927. The occasion was also rendered noteworthy by the attendance, in his official capacity as President of the National Veterinary Medical Association, of Professor G. H. Wooldridge, while other distinguished visitors were Dr. Colston Williams, M.O.H. for the County of Glamorgan, Dr. W. G. Savage, M.O.H. for the County of Somerset, and Major Frank Chambers, of Wolverhampton.

Mr. J. L. Perry, who occupied the Presidential Chair after its vacation by Mr. J. J. Aveston, was supported by the following members: Messrs. J. R. Barker, J. W. Baxter, T. J. Brain, J. C. Coleman, W. T. Edwards, R. W. Hall, J. R. Hewer, T. J. Margarson, R. Moore, C. E. Perry, J. R. Powell, Brin. Sayers, Edwin Sayers, W. M. Scott and W. R. Watson, together with Mr. W. D. Rees, Hon. Secretary.

The receipt of apologies for absence was announced from Mr. Austin, Major Dunkin, Messrs. Mullane, Pike, Robinson, Thorburn, Wright, Williams (W. R.) and from Drs. Hughes, Lowe, Martin, Rocyn Jones and Tangye.

The *Minutes* of the last Annual General Meeting of the Division, which had been published in the *Record*, were taken as read and were confirmed.

SECRETARY'S REPORT.—Mr. W. D. Rees (Hon. Secretary) presented his report in respect of the activities of the Division during the past year, as follows:—

I have to report that during the past year, there have been held one Annual General, three General, and two Council Meetings. In spite of the difficult and trying times experienced, your Council is able to report that the interest in, and the aims of, the Division, have been well maintained. The attendance at the Meetings has been fairly satisfactory (an average of twenty-six), yet it is felt that it can be improved, in spite of the many difficulties with which our members have to contend in order to get to our meetings.

Your Council feel sure that any sacrifice made by the members to attend will be fully compensated by the benefit derived from the interchange of views on subjects of common interest, and by the atmosphere of social professional fellowship experienced at our meetings.

During the past session six new members were admitted, while there were three resignations, owing to members leaving the area of the Division.

The following papers were read:—"Some Observations on the Examination of Horses for Soundness," Prof. James Macqueen, London; "Infection of Cattle with Bacillus Abortus," Mr. J. R. Barker, Hereford; "Clinical Cases," Messrs. J. W. Stewart, Cardiff; R. W. Hall, Barry; J. G. Wright, Cardiff. Demonstration:—Clinical Examination of the Genital Apparatus, and the Flushing of the Uterus of a Cow, by Mr. J. R. Barker, Hereford.

Many morbid specimens were shown during the Session. The Council desires to thank all those who read papers, recorded Clinical Cases, and exhibited morbid specimens. Your Council further desires to record its thanks to those who so added to the enjoyment of our meetings by their hospitality.

W. D. REES, *Hon. Secretary.*

The report was received and adopted, without discussion.

TREASURER'S REPORT.—Mr. A. S. Adams (Hon. Treasurer) presented a report which showed the finances of the Division to be in a satisfactory state. The response to an appeal made by him for the payment of subscriptions in arrear had been a satisfactory one, but he had to leave it to the Council to deal with eight members who were in arrears for three or four years. The finances of the Benevolent Fund showed a balance of £56 11s. 1d., while he hoped that members would enable him to increase by a further £100 the sum of £300 standing to the credit of this Fund in Consol investments.

The report was received and adopted.

ELECTION OF OFFICERS.

The following members were elected to hold office during the year: *President:* Mr. J. L. Perry. In returning thanks for his election, Mr. PERRY said that he accepted with some misgiving the honour conferred upon him, but he felt it was a duty he must not shirk, and the knowledge that the members would rally to his support inspired him with some measure of confidence. He believed it was the custom, in a Presidential Address, to review modern veterinary politics, but he had his doubts as to the advisability of that course, as he would then be the editorial "We," and matters such as those were better left for discussion, when everyone could air his views. He did wish, however, to refer to one matter which had struck him very forcibly, and that was the appeal which had recently been issued for the provision of funds for the rebuilding of the Royal Veterinary College. He thought it humiliating that the issue to the profession of such a circular should have been necessary. He had recently had the privilege of visiting the Continent with Major Hobday's party. They were shown over the Utrecht Veterinary School, and that made him thoroughly ashamed of the cramped, dilapidated and out-of-date premises at Camden Town (hear, hear). There was abundance of space, and a dissecting room where it would have been positive sacrilege to sling a muscle (laughter).

He was proud to have the honour, on his initiation to that Chair, of welcoming on their behalf the President of the Royal College of Veterinary Surgeons, Lt.-Col. Brittlebank, and the President of the "National." Professor Wooldridge (applause). Having done so, it only remained for him to thank them again most heartily for the high honour they had accorded him in electing him to the Presidential Chair.

Vice-Presidents: Messrs. Hall, Hewer, Pike and Veitch.

Hon. Treasurer: Mr. A. S. Adams (re-elected).

Hon. Secretary: Mr. W. D. Rees (re-elected).

Messrs. Adams and Rees were cordially thanked for their services during the past year.

COUNCIL: Messrs. Adams, Barker, Coleman, Hall, Hewer, Hobbs, Moore, Perry (C. E.), Pike, Robinson, Sayers, Scott, Stewart and Veitch.

ANY OTHER BUSINESS: Mr. SCOTT: If I may be allowed, I should like to make reference to a matter which, I think, merits the attention of the members. Some years ago I had the honour and pleasure of proposing that Sir Isambard Owen be elected an Honorary Member of this Society. Some days ago I read in *The Times* an account of his death, and I think it is fitting that we should send from this meeting an expression of sympathy with the bereaved.

The meeting concurred.

"THE VETERINARY SURGEON IN RELATION TO PUBLIC HEALTH."

The PRESIDENT invited Lt.-Col. Brittlebank to address the meeting on the above subject.

Lt.-Col. J. W. BRITTLEBANK, C.M.G., D.V.S.M., Chief Veterinary Officer to the Public Health Department of the City of Manchester, President of the Royal College of Veterinary Surgeons, said:

Perhaps you will permit me—at the start of the proceedings, so far as I am concerned—to congratulate you, Mr. President, on your election to the Chair to which you have been elected to-day. Your Society is one of comparatively recent growth, but there can be no question that it has filled many other Societies with a good deal of envy to see the enthusiasm and, shall I say, the loyalty with which members of the Veterinary Profession in this part of England and in South Wales have combined together to try to do something to further the interests of the profession to which most of us belong.

These combinations of local organisations are all divisions of the central organisation, the "National," of which we have the President, Professor Wooldridge, here to-day (applause). There can be no question that such organisations, even if they only bring men together to knock off the little excrescences which are apt to grow on isolated individuals, will have served a tremendous purpose. But they do a great deal more—they broaden our views, they enable us to exchange opinions, and they create enthusiasm for our professional ideals, especially when they are run so admirably as is this Society.

In coming amongst you to-day, I can sincerely say that, occupying the position which I do at the present time, I feel that you have done me a great honour in asking me to come to your meeting. It is many years since I was last at Bristol—to be precise, it is twenty-eight—and on that occasion I came on a job

that was perhaps a little less responsible than that which has brought me here to-day—it was to play football against Bristol (laughter).

Throughout this lapse of time one has seen much progress in our profession. I think the profession has justified itself and that it will continue to justify itself in the years to come, but it is impossible to conceive the immense responsibility which will be placed upon our successors.

In addressing you on "The Veterinary Surgeon in relation to Public Health," I would say that first of all I was rather tempted to try and write a paper, but when I attempted to put some notes together I found that it was so enormous a topic that dealing with it in a paper would be productive of an essay of so inordinate a length that you would regret for ever that you had asked the President of the Royal College of Veterinary Surgeons to come amongst you (laughter). But there are certain things that I feel I must say concerning what I think should be the development of the profession in regard to this great and important question.

Probably, thirty years ago, if one had ventured to suggest that there would come a time when the veterinary surgeon would have a very important sphere in this large field, one need not have been surprised if one had been scoffed at, but even at that time certain pioneers in the medical profession were commencing to recognise the extraordinary difficulty that there was in separating animal disease from human disease, that there was probably a close relationship between the two and that there was a possibility that good would accrue if the veterinarian was called in to lend a hand. These pioneer veterinarians were for the most part employed in the field of meat inspection, and we owe a tremendous debt of gratitude to them for the wonderful standard which many of them set and for the work which they accomplished—men like King, who left their mark and are still spoken of as experts in that particular field. But progress was always interrupted by the fact that there seemed to be no clear idea in the general field of preventive medicine as to where the veterinarian should come in, or where he should help, and at one time it seemed to lend itself to a sort of political struggle as to who was going to be the "boss." Those of us who were rather keen on the wider aspect of the case were not particularly concerned, because we felt that there was something bigger than all this behind it—that there was really something more worthy for the profession to do than to quarrel over details as to the positions to be occupied at first; and I may admit that at the time I came into public health work—now nearly six-and-twenty years ago—the position in which one found oneself was a very humble one indeed, and it was probably at that time a justifiably humble one, because one had to justify one's existence before there could be any general recognition, so far as the general public health service was concerned, of the necessity for the veterinarian. But times have moved, and I think he would be a bold man who would now assert that any public health staff would be complete without a properly qualified veterinary surgeon having his place upon it.

At the present time, in meat inspection, in milk inspection and in inspection along many of the other lines which are presented to the veterinarian employed on public health work, I think there is ample evidence to show that he has at any rate made good, so far as his share in the work is concerned. But that work is performed in a very limited sphere. It may be justifiably limited, but some of us are apt at times to be a little ambitious and I think—and I speak now not only for the veterinary profession, as President of the Royal College, but as one with some experience of Medical Officers of Health—that the best Medical Officers of Health admit that the proper person to carry out the responsible duties of meat inspection is the qualified veterinary surgeon. Whether it is possible to have the whole of the meat inspection under veterinary surgeons is another matter—the public purse has to be considered—but I think it will be agreed that in the light of their training and their experience the qualified members of the veterinary profession are the persons best fitted to deal with this question of meat inspection. In the later years, speaking generally, the field of milk inspection has opened up, and it may be profitable to recapitulate, for a moment, the steps by which this work gas developed. It was originated, very largely, by my old chief—a man whom I revere more than any man with whom I have ever had to work—the late Dr. James Niven, of Manchester. It is to him, a former Medical Officer of Health of the City, that the credit is due for the initiation of measures to deal with tuberculous milk. Niven was a man who lived probably twenty to twenty-five years before his time, and before he came to the City of Manchester, in 1896, he had been working on the question of bovine tuberculosis and its relationship to man. Niven was convinced that a material proportion of tuberculosis was being conveyed through the milk supply to the human population. When he came to Manchester he came into close contact with the late Professor Delepine. Delepine's work stood by itself—he was for a period an examiner for the Royal College of Veterinary Surgeons—he made this subject his own for a great many years, and his work was of such a character that it could not be disputed, because of its accuracy, its care and, shall I say, the ingenuity with which it was pursued. As a result of the work of these men it was decided, in combination with the neighbouring city of Liverpool, to apply to Parliament for certain powers to try and deal with these sources of infection, it being recognised that cows suffering from tuberculosis of the udder were the principal sources of infection.

You will think I am talking of tuberculosis because I have had so much to do with it, but believe me—if you will let me interpolate the remark here—to my mind the key of admission to the whole of the work in this field is *via* tuberculosis, and when you have dealt with tuberculosis you have gone a long way in

dealing with most of the other diseases which are preventible.

Parliament granted certain powers, and this work was carried on for a great many years, and gradually other cities and other public health authorities adopted these milk clauses. The local Government Board drew them up and they became almost general in their application—at any rate, so far as the big cities were concerned. Under them it was required that, when tuberculosis was found in the milk, a qualified veterinary surgeon should go to the farm and try and find out the animal or animals which were the sources of infection. By this work an enormous mass of evidence was collected—at any rate so far as tuberculosis in bovines was concerned.

The large cities then began to feel that it was time something further was done, and conferences were called, pressure was brought to bear and the Government were persuaded that at last something had to be done. In 1909 the Ministry of Agriculture proposed to launch their Tuberculosis Order as their contribution to the campaign, but as at that time the Ministry proposed that the local authorities should bear the whole of the expense, the Order met with a naturally unfavourable response. In 1913 a somewhat modified Order was issued. This signalised the greatest step forward in the campaign against bovine tuberculosis, for it brought the general practitioner and the veterinary profession into the field of public health. A large number of tuberculous animals was dealt with under this Order, and was being continuously dealt with until, unfortunately, all these measures had to be suspended during the War. Since the War the Order has come in again, in 1925.

We had passed, in 1915, the Milk and Dairies (Consolidation) Act, which was also suspended, and an amending Act was passed in 1922 which gave certain powers to local authorities, while regulations were made under the Milk (Special Designation) Order which established a number of milk classifications. In 1925, at the same time as that Order came into force, the Milk and Daries (Consolidation) Act commenced to operate.

Now, it is with regard to this particular Act that I particularly want to say something. Throughout the country this Act, it is understood and it was laid down, had to be administered along with the Tuberculosis Order, and I feel that so long as merely the provisions of the Tuberculosis Order are carried out—and that means, roughly, the finding of advanced cases of tuberculosis—very little good is going to be done. I say advisedly that very little good is going to be done because most of the animals that have been withdrawn from the milk supply, suffering from tuberculosis, have perhaps done as much harm as they were likely to do.

I do not propose to enlarge upon the Tuberculosis Order at the moment, but, recognising that tuberculosis is a disease which, in bovines, so far as I am aware, shows no differences in its recognised clinical characters, or its pathological characteristics, from the disease in man, and that its causes—or its premonitory causes—are very much the same, namely, dirt, darkness and insufficiency or inadequacy of food, where infection is present, I wish to point out that since the confirmation in this country of Cornet's work on tuberculosis in man, there has been a very gratifying fall in the tuberculosis death rate. Our problem is, therefore, inseparable from that which faced those who launched the great campaign against human tuberculosis which was the outcome of Cornet's work.

In bovines I think many people expect that as a result of the operation of the Tuberculosis Order that there will be a large fall in the incidence of bovine tuberculosis. But I fear that their hopes are not likely to be justified. The Order is altogether too restricted, and I dare say that at the moment it may cross your minds that what I am out for is the expenditure of a great deal more money. I realise the state of the national exchequer, and I realise that to ask for the expenditure of large sums of money is a pretty hopeless proceeding. I realise, too, that any drastic plan for the rapid elimination of tuberculosis from our herds would be folly, but I am convinced that unless the veterinary profession are prepared to say that this Order is not likely to lead to any (I want to be careful what I say) to any permanent reduction, or any marked reduction in the incidence of bovine tuberculosis in this country, then there will come a time when the cost of the administration of this Order will have to be re-considered, and it will be found that local authorities are spending a great deal of money in trying to deal with tuberculosis, with very little result for the money that they have spent. At the finish, the only result will be probably that they will say that the veterinary profession is failing in this particular duty which has been placed upon it.

It is true that the Order is only a starting point, but I venture to suggest that it is a starting point which is based merely on lines of expediency. It must be recognised that in dealing with a disease like this, which causes enormous losses throughout the country, a policy of expediency will lead us nowhere. We know quite well what the cattle population of this country is; we know that of that cattle population there are some three million of the cows in milk, and it would be no exaggeration to say that one-third of these have tuberculosis in some form or other, and it is a perfectly easy question to ask what would be the financial loss attendant upon this disease. I say it would be a perfectly easy question to ask, but I venture to assert that it is an absolute impossibility to ascertain what this disease really means financially to our herds in this country. For there is no single disease that I know of in our dairy herds which is not complicated by the question of tuberculosis. Take any disease you like, and I think you will find that the existence of tuberculosis makes your work more difficult. Take tuberculosis itself and you will realise—at any rate, the man who has to pay the cost of feeding his cows will realise—that a tuberculosis-ridden herd costs

more to maintain than one which is free. And so I could pursue the subject to its logical conclusion.

The point I want to make is the dire need for the establishment of a proper veterinary service, and I want to say that I am very glad to see Dr. Williams and Dr. Savage here to-day when making this plea, in order that we have the help of the Medical Officers of Health in carrying out our suggestions. I go further, and I say that unless you establish a proper veterinary service throughout the country on the same lines as your own medical service, and closely associated, this question of dealing with this constant stream of disease from our cattle population to our human population cannot be effectively tackled.

In establishing this veterinary service, I am convinced that it is necessary to call in to the assistance of the public health authorities practically all the practising veterinary surgeons in the country, that there should be a proper organisation of team work, and the present method of dealing with tuberculous infection from animals to man shall be put on to a proper scientific basis; that every county should establish a veterinary service; that the full effect of this Act that was passed in 1915 should be made use of to get the best out of it. Instead of doing so, a lot of county authorities are trying to work it as little as they can and with as small an expense to their ratepayers as they can.

What, then, is the correct line to pursue? I hope you will accept it that these are my own views and not those of any conceivably interested party. I am convinced, from a long experience in handling this disease, that there is only one line, and that is to see that every cow in every herd is regularly and systematically inspected and properly examined by qualified veterinary surgeons, to get rid of the animal before she becomes a danger to man.

There is an idea prevalent that the veterinary surgeon cannot diagnose tuberculosis by clinical methods. That is an unfortunate impression—unfortunate, because, as I think most of you will agree, if you are required to do so you can make a reasonably safe disgnosis so far as tuberculosis is concerned. It has been said that you cannot proceed without the tuberculin test, and it has been said, further, that the veterinary surgeon cannot diagnose tuberculosis of the udder; that is perfectly true in very many early cases of tuberculosis of the udder, but I venture to say that when the men have the necessary experience of examination of the udder there will be a much greater percentage of cases diagnosed and dealt with in the earlier stages of the disease.

I am persuaded from my *post-mortem* observations that tuberculosis in bovines is a disease characterised by recurrent infections more than by having single infection, and when we remember the conditions under which our cattle live for a considerable portion of the year—in dark, ill-ventilated, over-crowded dwellings—with the consequent heaped-up, concentrated infection, one only marvels, not at the prevalence of tuberculosis amongst them, but that any should escape.

In my opinion, it would be better if this money which is being expended now were expended on prevention at the source of the infection, so that this disease might be dealt with at its root. You may consider that to secure alterations in these dwellings is a very expensive matter, and also that you can get tuberculosis present in a palatial cow-house as well as in an insanitary one. I know all about that—I have seen it too often—but if you will realise, as I feel you do, that palatial dwellings are a financial impossibility, and that it is quite easy (we have done it for years) to secure simple and effective alterations in a great majority of cases at no great expense, then we shall have made a great step forward in the march of progress against at any rate one disease and a disease which is, in my opinion, the key to the whole of the question with which we have got to deal.

If I may bore you for a few more minutes, I would like to picture—I will try and picture—what I would like to see prevailing in every county in this country; a complete veterinary organisation, occupying, or engaging, qualified and experienced practitioners, who must be capable not only of handling the cattle but of handling the men who have to look after them. You would then proceed to see that no man has too big an area for him effectively to carry out the necessary examination of all the cattle in that area and that all the veterinary services be co-ordinated under one committee.

Many authorities are of the opinion that this work cannot be done without a complete equipment of whole-time men. I am a whole-time man myself, and I venture to suggest that they are wrong. If they would say that it cannot be done without the practitioner they would be right, and it can, in my view, best be done by the association of the whole-time man with the practitioner. No county should have more than one or two whole-time men; they would have ample work to do in assisting all those inspectors in carrying out their duties, in supervising and in undertaking (what always has to take place in public health work) some of the dirty work, so far as the owners are concerned. There should be no separation, neither should there be any duplication or over-lapping—there should be a complete advisory service, the practitioner working in the field, the whole-time veterinary officer responsible for the general administration of the Orders and working as the liaison officer between the man in the field and the controlling authority.

Whether you agree with me, or not, it is not for me to say. I hope that the day will never come when you will form yourselves into factions to try and separate practitioners from the part-time-inspectors or from the whole-time man. That road is the road to disaster.

(To be continued).

Four public lectures arranged by the University of the London Animal Welfare Society will be given at the Birkbeck College (University of London) on "The Care of Domestic Animals," by Major R. F. Wall, M.R.C.V.S., at 5-45 p.m., on Wednesdays, February 9th, 16th and 23rd, and March 2nd. Admission will be free, without ticket.

Central Division.

(*Continued from page* 114.)

Mr. J. M. ARMFIELD (who is home from Tanganyika and who was warmly welcomed to the meeting) exhibited the following specimens: Two bovine kidneys, badly infected with infarcts, from a case of East Coast fever; greatly enlarged prescapular glands, from the same animal, the gland being about six times the normal size, and maggots laid by a fly in the skin of a fox terrier, also found in Tanganyika Territory. In connection with this specimen, Mr. Armfield remarked that he was not aware that its existence was recorded in text-books. With regard to the kidneys, he reminded his hearers that it was by no means the rule to find infarcts in kidneys in East Coast fever cases, but that they were very helpful evidence when found. Mr. Armfield also showed specimens of *cysticercus bovis* (the cystic form of *Taenia saginata*) from the muscles of the ox which, he said, was very common in the Territory, as many as half the animals being found affected with it in some of the slaughter-houses.

Major H. KIRK: I have here a morbid specimen removed from a cat. Interest does not lie so much in the specimen as in the clinical history of the case. A tabby 'entire' cat was attended by me last Saturday night, when I discovered the following symptoms:—marked dyspnœa, and acute abdominal pain indicated upon the slightest palpation in the region of the kidneys. Violent retching sometimes occurred, when the cat would shriek out: this would be often preceded by bouts of running backwards, and followed by great difficulty in breathing, a haggard expression on the face, and continuous endeavours to find a comfortable position. The temperature was 102°F. Diagnosis was extremely difficult and, after consideration, I eliminated pneumonia, œsophageal obstruction, bladder troubles and poisoning. I thought the possibilities were either acute enteritis, the presence of foreign body in the bowel, or very severe contusions of the internal organs. Chloral was given *per rectum* and chloretone by mouth, but these were only partially effective in inducing sleep and analgesia. The bowels and kidneys worked normally. On Monday evening X-ray photos were taken and were negative. This caused me to refrain from performing exploratory laparotomy. The cat died during that night. Upon *post-mortem* I was astonished to find a large rupture of the left side of the diaphragm, the stomach and part of the liver being in the chest cavity. The small bowel loops were tightly bound up by fibrous adhesions, in the centre of which was discovered a sloughing mass surrounding a perforation of the ileum. (Specimen exhibited.) Severe bruising of the subcutaneous tissue was noted over the region of the sternum. I believe a blow here had caused the rupture, but I cannot account for the origin of the bowel perforation.

Another interesting case was that of a Dandie Dinmont which had been very debilitated over many weeks, It had rickets, poor appetite, marked asthenia and was thin and weak. It is important to note that there had never been any blood in the fæces, nor vomiting or diarrhœa, and no discoverable symptoms other than those described. After three weeks of vitamins, concentrated foods, ultra violet radiation, tonics, etc., it died. Upon *post-mortem* a 9-inch invagination of the bowel was found. It was difficult to decide how long it had been in existence, but as the dog never exhibited a sign of such a malady, I was inclined to think it was fairly recent. It would, however, have been convenient to have been able to ascribe the dog's illness to intussusception, were that possible.

At the last meeting I showed a pair of forceps I had had specially made for me to facilitate the administration of pills and gelatine capsules to cats and small-mouthed dogs. Since then, two veterinary surgeons have written asking me for information as to where these can be obtained. I have, however, improved very greatly upon the first pattern, and in passing this pair of forceps round, I ask you to notice that the shank is longer and finer and the spring tension much lessened. Finally, I have here a most useful little instrument for the cleaning of dogs' and cats' ears. A wad of wool is easily wound upon it and remains in position until removed. The great point about it is the ease with which one can remove the soiled wool, for it is only necessary to give the instrument a few turns when the wad "unscrews" up the spiral grooves. One thus avoids contaminating one's fingers with discharges, etc., in an endeavour to remove wool from orange sticks or roughened aluminium ear instruments. It is not a new thing, I know, but it may be new to many veterinary surgeons, and helpful to not a few.

The PRESIDENT having invited discussion of the exhibits shown and the interesting cases cited, Professor WOOLDRIDGE said: One hardly knows what to say in connection with all these interesting cases and specimens—it is impossible to discuss them all. Colonel Pallin's first case was of extraordinary interest and it would have been of yet greater interest if one had had the history of the original injury which was the cause of the damage to the radius. I have never seen a fracture in that particular position. This case is of particular interest to me at the present moment because I myself only recently sustained a small fracture in a similar position on the ulna in my left wrist. However, I have not got ostitis going on, nor is anchylosis appearing or any union taking place of the bone in the main portion, and, as Colonel Young reminds me, we have not yet arrived at the *post-mortem* stage (Laughter.) Concerning the calculus, that is a very good specimen, but one rather wonders that a positive diagnosis was not made earlier, in which case it might have been removed surgically and the life of the animal saved. You may remember that some time ago I exhibited a calculus taken from a gelding, and it was much thicker than this specimen, though not quite so broad. That was removed surgically through the urethra

by an incision made at the ischial arch. That was removed from a gelding and I think this one could have been removed also and the life of the animal saved. In regard to the sudden death of the 16-year-old mare, we got no information as to whether or not any histological examination of the arterial wall was made. It would have been very interesting to know if there had been any degeneration of the wall. In reference to Mr. Macara-Finnie's exhibit of a tumour from the testicle of a cat, one cannot understand how it could ever have been diagnosed as a prolapse of the rectum, unless the whole thing was denuded of skin and red and moist on the outside. One would rather feel disposed to contend that the person who had made the diagnosis was an unqualified man.

We are very glad to see Mr. Armfield with us this evening and to have his interesting specimens before us (hear, hear). We do not often get the opportunity of seeing morbid specimens of East Coast fever cases. Mr. Armfield referred to the prevalence of *Cysticercus bovis* in Tanganyika and I would like to ask him what they do there in regard to meat inspection in this connection. I ask that because the procedure varies in different parts of the world, depending on the frequency with which this condition is met. In this country, where the condition is not often seen in carcases, the condemnation of the whole is practised; on the other hand, where it is more frequently met with a wider discretion is used, and the commoner sites of the cysts are alone condemned. Concerning the maggots from the dog, I do not quite understand whether they were found under-running the skin—in much the same manner as one finds them in sheep—or whether they were more resembling warbles, as found in cattle.

Mr. ARMFIELD: They were just underneath the skin; one could squeeze them out.

Professor WOOLDRIDGE: Major Kirk's case of rupture of the diaphragm in the cat is the type of case of which I have seen several and in each instance—I have seen this condition both in the dog and cat—the injury was the result of the animals having been run over. The cases, however, were more of the nature of a marked dilatation of the œsophageal foramen than a rupture of the tissue of the diaphragm. It would be interesting to know if there were adhesions of the muscular portion of the diaphragm to the herniated parts as they were wedged there. One cannot make any suggestion as to why there was the perforating ulcer and why there was not death from peritonitis at a very much earlier age.

Colonel PALLIN: Concerning the case of fracture of the distal end of the radius, I have written to try and get the history, and I will let you know it when I receive it.

Lt.-Col. RAINEY: In this specimen brought forward by Colonel Pallin, I cannot see a fracture and the history does not sound like that of a fracture. There is a rarefying ostitis and I should say it was a condition of rarefying ostitis which has developed to a sort of general arthritis.

The PRESIDENT: If no other Fellow has any comments to make, it only remains for me to offer, on your behalf, very hearty thanks to those gentlemen who have so kindly brought these specimens and interesting cases to our notice (applause).

ANY OTHER BUSINESS.

Proceeding, the PRESIDENT said: You might like to know the findings of your X-ray Committee. It has been decided by them to-day—and their decision has been upheld by the Council—that no further action be taken for the moment in regard to collecting funds towards the provision of an X-ray apparatus. This decision has been arrived at primarily owing to the broadcasting of the appeal on behalf of the Royal Veterinary College Rebuilding Fund, and it was thought that it would be inadvisable, not to say discourteous, if we continued with our efforts on behalf of our X-ray fund. The Committee is not anxious to take any action which might be contrary to your wishes, but feels, nevertheless, that you will very heartily uphold the view which they hold.

At this stage the President called upon Capt. LESLIE PUGH to read his paper on "So-called Nervous Distemper in the Dog," which, and the discussion (opened by Capt. T. Dalling) were reproduced at the commencement of last week's issue.

The proceedings terminated in passing a hearty vote of thanks to the essayist and to the opener of the discussion, and the according of a similar compliment to the President for his conduct of the meeting.

J. F. MACDONALD, *Hon. Secretary.*

Calving Cow Case Sequel.

At Preston Quarter Sessions, on January 12th, there was heard an appeal by John Birchall, farmer and dairyman, of Habergham Hall Farm, and of 104, Coal Clough Lane, Burnley, against a conviction by the Reedley justices for permitting unnecessary suffering to a cow and newly-born calf by leaving them in a field behind Reedley police station on October 10th, 1926, in very inclement weather. The appeal was against a conviction under the Protection of Animals Act, 1911, and a fine of £5, appellant having been also ordered to pay four guineas costs.

Mr. Ormerod, representing the respondent (an inspector of the R.S.P.C.A.), said the appellant was in the habit of purchasing in-calf cows, keeping them in a field until they calved, and afterwards selling them as milch cattle, and the prosecution arose out of one of these. No permanent damage to cow or calf was suggested.

P.C. Hope, stationed at Reedley, said the cow in question was a light roan non-pedigree dairy Shorthorn, and on October 10th he saw it in a field along with its newly born calf, which was shivering, as the weather was cold. It was a showery day, with rain, hail, and sleet, and the ground on which the calf lay was wet and inclined to be boggy. He thought under the circumstances unnecessary suffering was caused by the exposure.

Mr. John Barker, M.R.C.V.S., Carr Road, Nelson, said that undoubtedly the cow and calf suffered unnecessarily and should not have been out on the day.

Alexander Piesse, M.R.C.V.S., London, and also a farmer of some years' experience, said there was undoubted suffering from exposure if a cow calved in the open-air and remained there after calving in unfavourable weather.

Mr. H. B. Allen, of Accrington, M.R.C.V.S., agreed that October 10th was an unsuitable day for a cow to calve in the open.

THIS YEAR'S HOLIDAY FIXTURE: TORQUAY, SEPT. 12-17.

For the appellant, Mr. Darbyshire said that, not having sufficient pasturage on his farm, the appellant used the field mentioned as grazing ground for his lying off cattle and a look-out was kept on these by a Mr. Harker, a retired farmer, who lived near. After inspection some of the lying-off cattle were removed, but up to Saturday, October 9th, there was no reason to move the cow about which the case had arisen.

On October 10th Mr. Harker was too ill to overlook the cattle, and on that day Mr. Birchall was visiting Lancaster to see his mother who was ill. Counsel submitted there had not been any unnecessary suffering caused, and that enlightened farmers were finding it advantageous that their cattle should calve out-of-doors all the year round.

Evidence in support of appellant's case was given by the appellant, his daughter, his cowman, by Mr. E. G. Hothersall, and by various veterinary experts.

Joseph Wm. Brittlebank, President of the Royal College of Veterinary Surgeons, and chief veterinary officer for the Manchester Corporation, was of opinion that in the circumstances he had heard described there was no unnecessary suffering.

Mr. W. Woods, F.R.C.V.S., of Wigan, thought that with a cow that had been outside all summer there would have been greater risk run by getting it inside to calve than in leaving it outside. The calf in that case trotted along with its mother and remained in perfect health.

Mr. C. Blackhurst, M.R.C.V.S., Broughton, was also of opinion that no unnecessary suffering had been caused to either cow or calf.

Mr. J. D. Rankin, M.R.C.V.S., of Colne, said he would not have brought the cow indoors except for utility purposes.

Mr. W. Bennett, farmer and cattle dealer, of Poulton, said there was no cruelty whatever in a cow calving in the open. He had seen much of such calving in Dumfriesshire and Kirkcudbrightshire.

After deliberation in private the Bench returned to court, and the Chairman said: "We have most carefully gone into the evidence given in this case, and we are not satisfied with the supervision adopted by Mr. Birchall. There is grave doubt in the case, and that being so we are in the position of a jury, and we feel bound to say that we are not satisfied. The appeal must be allowed, the order quashed, and each side pay its own costs."

Preston Guardian.

In the island of Barbados elephantiasis is so frequent among humans as to be known as "Barbados Leg."

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The Bunsen Burner was devised in 1855 by Robert Wilhelm von Bunsen (1811-1899), German chemist, who was for many years professor of chemistry at Heidelberg.

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The word alcohol is of Arabic origin, being derived from the particle "al" and the word "kohl," an impalpable powder used in the East for painting the eyebrows. For many centuries the word was used to designate any fine powder; its present-day application is of comparatively recent date.

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Duke's Disease, an alleged exanthematous contagious disease resembling rubella, scarlatina and measles, is marked by lamellar desquamation of the skin. Derived its name from Clement Dukes, English physician. It is probably the origin of the term "the duke" used among old horsemen when speaking of mange in the horse.

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Nuttall discovered the bactericidal powers of blood serum in 1888. H. K.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Sept. 12-17th—N.V.M.A. Congress at Torquay.
Feb. 17th—Annual Meeting of the Lincolnshire and District Division at Grantham.
Feb. 25th—Annual Meeting of the North Wales Division at Bangor.
Feb. 25th—Annual Meeting and Dinner of the Lancashire Division at Manchester.

R.C.V.S. Council Election, 1927.

We are informed that Mr. P. J. Howard, of Ennis, Co. Clare, has been nominated for Election to Council of the College and think it will be useful to our overseas readers to reproduce the complete list of nominations up-to-date.

Name.	*Address.*	*Proposers.*
Bradley, O. Charnock	Royal (Dick) Veterinary College, Edinburgh	J. W. Brittlebank A. Gofton
Craig, James F.	Veterinary College of Ireland, Dublin	J. M'Fadyean J. H. Norris
Gaiger, S. H.	The University, Liverpool	J. M'Fadyean J. Moore
Gofton, Arthur	Edinburgh	J. W. Brittlebank O. Charnock Bradley
Holroyd, J.	1 Simmons Street, Blackburn, Lancs.	J. W. Brittlebank J. H. Wright
Howard, P. J.	Ennis, Co. Clare	J. F. Healy J. F. Craig
Levie, Alexander	Littleover, Derby	E. Marrison O. V. Gunning
McIntosh, John W.	Cricklewood, N.W. 2.	O. Charnock Bradley G. P. Male
Male, George P.	Reading, Berks.	J. W. Brittlebank J. W. McIntosh
Rabagliati, Duncan S.	The County Hall, Wakefield, Yorks.	A. Gofton O. Charnock Bradley
Whitehouse, Arthur W.	Glasgow Veterinary College	G. H. Wooldridge S. H. Gaiger

Royal Sanitary Institute.

An important Sessional Meeting, which will be of great interest to many members of our profession, will be held on Friday, March 4th, at 5 p.m., at the premises of the Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W., when a discussion on "Public Health Meat Regulations," will be opened by W. Brennan De Vine, M.C., F.R.C.V.S., D.V.S.M.(Vict.), Veterinary Superintendent, Birmingham. He will be followed by Charles Porter, M.D., B.Sc., Barrister-at-Law (M.O.H. St. Marylebone); J. S. Lloyd, F.R.C.V.S., D.V.S.M. (Chief Veterinary Inspector, Sheffield); J. A. Dixon, M.R.C.V.S. (Veterinary

Inspector, Leeds); W. G. Collinge (Past President, National Federation of Meat Traders' Association); Councillor John Edwards (Hornsey), and A. E. Bonham (Chief Sanitary Inspector, Exeter).

The Chair will be taken by Alderman W. Phené Neal, J.P. (City of London).

Personal.

The many friends of Captain Leslie Pugh, of Sevenoaks, will read with regret the following extract from a letter recently received at the office: "I have been in bed for a week due to some peculiar anaphylactic shock action on my heart following antiserum treatment for anthrax," while they will heartily endorse his concluding words: "I hope to be on my feet again soon."

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On behalf of our readers we offer, though we fear somewhat belatedly, our hearty congratulations to Mr. G. H. Williams, of Sloane Square, on the appearance of his name in the New Year's Honours List as a Member of the Victorian Order (M.V.O.). Mr. Williams is not only a member of the R.C.V.S. but also of the Royal College of Surgeons.

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Mr. G. Rocker, M.R.C.V.S., has been appointed by the Secretary of State for the Colonies to a post as Veterinary Officer in the Straits Settlements.

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Mr. C. S. Hunting has resigned his appointment as County Veterinary Inspector for the Castle Eden Petty Sessional Division owing to advanced age, and Major Peele, the County Chief Veterinary Inspector, has been appointed to carry out the duties for that district.

R.C.V.S. Obituary.

Broad, James Mason, Almond Cottage, Almondsbury, Glos. Graduated London, 21st April, 1864. Died 27th January, 1927.

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Gorman, Richard, Veterinary Officer, Livingstone, N. Rhodesia. Graduated Liverpool, 12th July, 1917. Died 7th January, 1927.

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Neeson, James Joseph, Cross Keys, Toombridge, Co. Antrim. Graduated Edinburgh, 24th May, 1895. Died 31st January, 1927.

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The Late Mr. James Broad, M.R.C.V.S.

"The death, which has occurred at Almondsbury, of Mr. James Mason Broad removes one of the best known figures in the veterinary profession in Bristol," says *The Western Daily Press* of February 1st. "Mr. Broad followed in the footsteps of his father, who was a veterinary surgeon of fame in Bath. He received a splendid training for his profession, being educated in London, Paris, and Edinburgh. His diploma upon becoming a member of the M.R.C.V.S. is dated 1864. Mr. Broad carried on an extensive business at 7 Old King Street, where he went into partnership with Mr. F. Macadam.

"Mr. Broad was for many years an inspector for the Board of Agriculture while he was extremely well known in the hunting field. He hunted regularly for many years with the Beaufort and Berkeley packs, while he also followed staghounds. After residing at Cotham, Mr. Broad went to live at Almondsbury, where his death has taken place in his 82nd year. He was skilled in music, his favourite instrument being the violin. At one time he had an interesting collection of eight-day clocks which he prized as being the best in the West of England."

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Death of Capt. Richard Gorman, J.P., M.R.C.V.S.

We regret to announce the death of Captain Richard Gorman, J.P., M.R.C.V.S., which occurred suddenly at Livingstone, Northern Rhodesia on the 7th January, 1927. Captain Gorman received his professional education at Dublin and Liverpool, qualifying in July 1917. Joining the Royal Army Veterinary Corps, he saw service in Egypt, where he attained the rank of Acting Major. He joined the Northern Rhodesia Veterinary Service in 1919 and spent some six years at Lusaka, where he was well known and respected. A good horseman and an enthusiastic sportsman, he was one of the founders of the Lusaka Gymkhana Club, a successful and enterprising organisation which H.R.H. the Prince of Wales honoured in 1925, when he rode two of Captain Gorman's horses.

Captain Gorman was a keen veterinarian and a conscientious civil servant, and his loss is much regretted by his colleagues in Northern Rhodesia. He was 35 years of age, and is survived by a widow and a son aged three.

Captain Gorman's early death will come as a great shock to the large number of our readers who met him at the Dublin Congress, when he was home on leave and apparently in robust health.

R.C.V.S. Library.

The following books have been added to the Library during the past week:—Crocker, "Veterinary Post-Mortem Technic"; Merillat, "Veterinary Surgical Operations"; Fröhner, "General Therapeutics"; Zinsser, "Infection and Resistance"; Paton, "Veterinary Physiology," (new edition); Thom and Church, "Aspergilli"; Murray, "Chemistry of Cattle Feeding"; Henry and Morrison, "Feeds and Feeding" (abridged); Bigelow, "Dissection of the Cat"; Lee, "Microtomist's Vade-Mecum."

Books may be borrowed from the library by members of the College on payment of postage both ways. Apply to the Librarian, 10 Red Lion Square, London, W.C.1.

Boxing.

A large number of officers, N.C.O.'s and men of the Royal Army Veterinary Corps, 47th (2nd London) Division T. A. gathered at the Drill Hall of the 13th Batt. (London) Regiment, to watch members of the Corps competing in the Boxing Competitions arranged by the 4th (London) Infantry Brigade. A very creditable performance was given by No. 7782825, Pte. J. Kent, R.A.V.C. 47th (2nd London) Divisional Veterinary Hospital. Although only a bantam weight (8st. 6lbs.) he entered for the Invitation Light Weight Competition and actually gave away 21lbs. to Pte. Parr of the 23rd Batt. (London) Regiment. He fought a very clean plucky fight and obtained a prize for the "Gamest Loser." Such a fine performance reflects great credit upon a Territorial unit which can produce and train possessors of such essentially British qualities.

At a Boxing Competition held at the Duke of York's Headquarters on the 3rd February, there were six entrants from the R.A.V.C. who acquitted themselves most creditably.

Dairy Research.

"The importance of research bearing upon the production and handling of dairy products is not questioned," says the agricultural correspondent of *The Times*; "it is possible, however, to exceed reasonable requirements and expenditure in work of the kind. It is proposed to provide and equip an institute for dairy research in Scotland. In view of the fact that there is already such an institute at Reading, fully and efficiently staffed, it seems needless to establish another of the same type in Scotland. The nature of the problems that are investigated does not suggest essential consideration of territorial or climatic influences. They are, presumably, purely scientific, and could as fittingly be studied at Land's End, or John o' Groats, as at any other centre. With Reading generously fitted for the purpose and already possessing wide experience it is not easy to understand what additional benefit is expected to result from duplicating the work, if that be the object, and expense in Scotland."

Carbon Tetrachloride Capsules

FOR LIVER ROT.

CHEMICALLY PURE carbon tetrachloride has been successfully used for the treatment of liver fluke disease in sheep and is recommended by R. F. Montgomerie, B.Sc., F.R.C.V.S., as an "eminently safe drug." *(Journal of Comparative Pathology and Therapeutics,* June, 1926.)

It is said to be superior to preparations of male fern and is quite free from danger.

The dose recommended is 1 c.c. given in a soft gelatin capsule, in the morning, preferably after the sheep has been fasted overnight.

Carbon tetrachloride is also an effective remedy against round worms and hookworms.

Carbon Tetrachloride Capsules, each containing 1 c.c., are supplied in boxes of 100 capsules

Parke, Davis & Co. Beak St., London, W.1.

VITAMINS

OF PARTICULAR INTEREST TO VETERINARY SURGEONS

Spillers are about to place on the market SAVALINE—a product which has been aptly described as the only scientific and practical puppy weaning food.

Veterinary Surgeons will be the first to appreciate its exceptional merits and are invited to write for free bulk sample.

SAVALINE is a concentrated milk food product containing the five essential vitamins, to which have been added phosphates, albuminoids and fats.

With the addition only of fresh cow's milk,* SAVALINE *provides the puppy with nutriment of the same strength as bitch's milk.

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CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Anthrax in the Elephants at the Zoo.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Many members of the profession will have heard the "Broadcast" on the wireless, and will also have read with interest the accounts in the daily press of the circumstances attending the deaths from anthrax of two elephants at the London Zoological Gardens; and some will wonder (as I did myself) why, when the first elephant was taken ill, a veterinary surgeon was not called in—especially as elephants are so valuable. Apparently somebody blundered and exploited an amateur diagnosis, with results which were nearly disastrous and might have cost the lives of at least four men, had not the illness and death of the second elephant made those in authority think it about time to seek veterinary advice. It was not until then that the services of the Honorary Veterinary Surgeon, Professor Wooldridge, were requisitioned, and at once anthrax was suspected and confirmed by microscopical examination. A letter which appeared in the *British Medical Journal* for the 29th ult. altogether forgets to acknowledge this, and it is only fair that the members of our profession shall be made aware of the part which veterinary scientific knowledge played in so important an affair.

It is indeed strange how we do things in England! For there is no zoo in any other city of the civilised world where the animals and birds (which have cost many thousands of pounds to get together) are allowed to have their diseases diagnosed by anybody but a qualified veterinary surgeon; and it is astonishing that such a commonsense body of men as those who sit on the Council of the Zoological Society do not recognise this as a fact and put their house in order in this respect.—Yours faithfully, FREDERICK HOBDAY.

The letter to which our correspondent refers, which appeared in the *British Medical Journal* of January 29th, is reproduced below, together with the editorial comment thereupon.

ANTHRAX AT THE ZOO.

Sir,—Having been responsible, on behalf of the Ministry of Health, for investigation of the circumstances of the recent outbreak of anthrax in the elephant house at the Zoo, you will perhaps allow me to correct certain inaccuracies in the article which appeared under the above title in last week's issue of the *Journal*.

You say that "Thanks, however, to the very prompt diagnosis of anthrax in the animals by Dr. Scott—he had diagnosed it within an hour of the necropsy—immediate and energetic steps were taken," etc. It is true that on the death of the *second* elephant Dr. Scott was able thus rapidly to arrive at a diagnosis of anthrax, subsequently confirmed by cultural and experimental methods. But as regards the *first* necropsy, such diagnosis of anthrax unfortunately was not possible, for the reason that, owing to the length of time that had unavoidably elapsed between the death of the elephant and the necropsy, microscopic examinations revealed only an enormous growth of *B. welchii*. Accordingly the cause of death was tentatively entered as "hæmorrhagic septicæmia." Nevertheless, as the appearance of certain of the internal organs gave rise to a suspicion of anthrax, all precautionary measures were taken as if the presence of the disease had been definitely determined. It was not until about a week later, when a man, who had taken part in the work of the first necropsy only, was found to have developed a typical malignant pustule, that it was possible to be certain as to the cause of death in the elephant first affected.—I am, etc., S. MONCKTON COPEMAN.

London, N.W.3,
24th January.

*** The additional information Dr. Monckton Copeman provides clears up the only point that was obscure. Apparently the *post-mortem* examination of the first elephant took place too long after death to permit the identification of the anthrax bacillus; this was effected by Dr. Scott in the case of the second elephant, upon which the *post-mortem* examination was, we understand, performed before the man who had assisted in the first was known to have developed anthrax.

Icterus in Ruminants.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I was interested in reading Mr. Harvey's letter in to-day's *Record* on "Icterus in Cattle." All cattle practitioners, I am sure, agree that it is extremely rare. Since the disease is so rare, I feel that I ought to record that I have a case of true icterus in a cow at the present time. The subject is pregnant, and shows a very decided yellow or bile-stained condition of the mucous membranes and non-pigmented skin. This cow had exactly the same trouble when pregnant last year, which passed off after parturition; she had diarrhœa after calving, and on account of this and the yellow colour of the skin, she was unsaleable. It is interesting to note that two kinds of icterus are recognised in human medicine during pregnancy: (1) Obstructive—kinking or torsion of ducts; (2) Toxic—toxæmia of pregnancy.—Yours faithfully, O. STINSON.

40 Pembroke Street, Appleby,
5th February, 1927.

"Distemper."

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I should be glad if you would kindly make two corrections in the report of the discussion on this subject which appeared in your issue of February 5th, in regard to my statements.

I am reported to have said: "We may all agree that we may and do get a simple form of distemper that may become complicated by secondary infections. Some of these secondary invaders may of themselves become primary causes of distemper, and as an instance of that I may mention the *Bacillus bronchisepticus canis*, which may cause a broncho-pneumonia quite independently of distemper."

This should have read: ". . . . Some of these secondary invaders may of themselves become primary causes of disease." The illustration given indicates my meaning, and without correction confusion might arise.

In my reference to beri beri, I am reported as saying that it is due to lack of husk in wheat. My statement was that beri beri was due to removal of the outer layer of rice, from the process of polishing, and that the aleurone layer of wheat, which also contains vitamin B, would be lacking in biscuits made of white flour instead of whole wheat. It might, therefore, be conceivable that neuroses due to the absence of that vitamin in a diet should arise somewhat resembling some of the forms of the nervous affection under discussion.—Yours faithfully, G. H. WOOLDRIDGE.

Royal Veterinary College,
7th February, 1927.

The Editor acknowledges the receipt of the following:

Communications from Mr. W. T. D. Broad, Miss Doris Knight, Messrs. R. A. S. Macdonald and D. E. Pugh.

R.C.V.S. Council Election.

TO THE FELLOWS AND MEMBERS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

Gentlemen,—I beg to offer myself for election to the Council of the Royal College of Veterinary Surgeons.

I am in favour of keeping up and where necessary raising the standard of education, both general and technical, for those wishing to enter the profession.

Having lived abroad for many years, the interests of members living and working overseas make a forcible appeal to me; at the same time, I am fully aware that the position of the profession as a whole is dependent on the prosperity of the general practitioner at home, whose welfare must be jealously guarded.

Should I be elected, I would do all in my power to further these interests and to work for the benefit of the whole profession.—Yours faithfully, D. S. RABAGLIATI, Edinburgh.